

TWO NEW BRAZILIAN SPECIES OF BRUNFELSIA

BY
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In anticipation of my forthcoming revision of the South American species of *Brunfelsia* (Solanaceae) based on a doctoral dissertation at Harvard University (Plowman, 1973), I herewith offer the description of two previously unrecognized species.

I would like to express my thanks to the curators of the several herbaria who have graciously loaned specimens cited in this paper. Abbreviations of herbaria are taken from Index Herbariorum (Lanjouw and Stafleu, 1964). Special thanks are due also to Dr. Leslie Garay for checking the Latin descriptions and to Lynda Bates for preparing the line drawings which accompany the text.

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***Brunfelsia Martiana* Plowman sp. nov.**

Frutex. Folia subsessilia, oblonga, plerumque elliptico-oblonga vel oblongo-lanceolata, apice acuminata, basi late cuneata vel obtusa, utrinque glabra, nervis lateralibus 8–12, petiolo brevissimo. Inflorescentia terminalis vel

axillaris annotinis ramulis, pauciflora, glabra. Flores 1–7, albidi vel albo-virescentes. Pedicellus erectus, gracilis, glaber. Calyx tubulosus vel tubuloso-campanulatus, glaber, dentibus subaequalibus, triangulari-ovatis vel ovato-lanceolatis, apice acutis vel acuminatis. Corollae tubus quam calyx duplo longior, rectus, apice parum inflatus, glaber, limbo patenti, lobis subaequalibus, oblongo-obovatis, apice rotundatis vel subtruncatis, marginibus lateralibus abrupte reflexis. Stamina inclusa in tubi parte superiori. Ovarium oblongo-ovoideum. Fructus ignotus.

A *Brunfelsia guianense* foliis oblongis, longioribus, nervis lateralis pluribus (8–12), calyce tubuloso-campanulato et corollae tubo quam calyce duplo longiori et a *B. amazonica* foliis majoribus et pedicellis multo brevioribus differt.

TYPE: Brazil: Amazonas: "Provinciae Rio Negro, habitat in sylvis ad flum. Japurá, prope São João do Príncipe," Dec. 1819, *Martius* [3247] (holotype, M; isotypes, M).

Shrub to 1 m. tall. Branches few, naked below, somewhat knobby at nodes, glabrous. Bark cracked longitudinally, dark reddish brown, shiny, furnished with lenticels. Leaves scattered along branchlets, subsessile, mostly oblong, sometimes elliptic-oblong or oblong-obovate, acuminate at apex, broadly cuneate to blunt at base, blade 10–25 cm. long, 4–8 cm. wide, glabrous on both surfaces, firmly membranaceous to subcoriaceous, upper surface dark green, dull or shiny, lower surface paler green, sometimes shiny, midrib dark reddish brown, lateral nerves 8–12 pairs, spreading, straight; petiole short, 1–4 (12) mm. long, glabrous, becoming cracked, rugose. Inflorescence terminal or axillary in the upper leaf axils, glabrous, axis 2–10 (15) mm. long. Flowers 1–7 per inflorescence, sometimes with short peduncle which articulates with pedicel, greenish white to white. Bracts 1–3 per flower, linear-lanceolate, concave, 1–10

PLATE XI



Photograph of holotype of *Brunfelsia Martiana* Plowman,
K.F.P. von Martius [3247].

mm. long, ciliolate at margin, caducous. Pedicel short, slender, 3–6 (10) mm. long, glabrous. Calyx tubular to tubular-campanulate, 8–12 mm. long, 3–8 mm. in diameter, glabrous, rarely striately veined, teeth subequal, triangular-ovate to ovate-lanceolate, 2–6 mm. long, acute to acuminate at apex. Corolla tube twice as long as calyx, straight, cylindric, inflated at apex, 20–24 mm. long, 1–3 mm. in diameter, glabrous; limb spreading, somewhat undulate, 15–22 mm. across, lobes subequal, oblong-obovate, abruptly reflexed at lateral margins, rounded-truncate at apex, 5–10 mm. long. Stamens included within upper part of tube; filaments subligulate, longer anterior pair 4 mm. long, shorter posterior pair 3 mm. long; anthers orbicular-reniform, slightly unequal, the upper pair somewhat smaller, about 1 mm. in diameter. Ovary oblong-ovoid, 2 mm. long; style filamentous, a little broader and curved at apex, about 15 mm. long; stigma briefly bifid, upper lobe slightly larger, 1 mm. long. Fruit and seed unknown.

DISTRIBUTION. Brazil (Amazonas, Pará, Bahia); Guyana.

ADDITIONAL SPECIMENS. BRAZIL: PARÁ: Faro, 22 Jan. 1910, Ducke s.n. (MG); Bella Vista, Rio Tapajóz, matta das immediações do Campina do Perdido, 12 Feb. 1917, Ducke s.n. (MG); Região do Jutahy de Almeirim. Palhal, 16 Apr. 1923, Ducke s.n. (RB); Gurupá, 25 Feb. 1923, Ducke s.n. (RB); Pará, May 1819, Martius 3300 (M). AMAZONAS: Manáus and vicinity, road Manáus-Caracarai, km. 22, 21 Mar. 1967, Prance et al., 4704 (WIS), Rio Negro, Cachoeira Baixa de Tarumão, 11–14 Apr. 1973, Schultes & Rodrigues 26132-A (ECON), 26133 A (ECON). BAHIA: Distrito Ileus, Ferradas, Dec. 1818, Martius s.n. (M); Feira de Santana, Apr. 1850, collector unknown (G).

GUYANA: Essequibo-Demarara River, Madray-Bubu Trail, Topy Trysil Forest, 8 Feb. 1944, Forest Department 4422 (K).

Brunfelsia Martiana is named for K. F. P. von Martius who first collected the plant in the year 1818. This new specific concept has proven difficult to define, not through its lack of distinctive characters, but due to the scarcity of specimens which are scattered in Brazilian and European herbaria.

PLATE XII



BRUNFELSIA *martiana* *Plowman*

Brunfelsia Martiana Plowman. 1, flowering branch, one third natural size. 2, corolla limb from beneath, approximately natural size. 3, calyx showing attachment to stem and bracts, approximately natural size. 4, excised corolla tube showing stamens and pistil, one and one-half times natural size.

This interesting shrub grows in the understory of lowland tropical forests from Guyana throughout the lower Amazon basin and with disjunct populations in the coastal forests of the State of Bahia. The species has been collected only twice in the last fifty years, and no collections of it are known from Bahia since 1850.

Brunfelsia Martiana is closely related to *B. amazonica* Morton and *B. guianensis* Benth., which also have rather small, greenish white flowers and occur sympatrically with *B. Martiana* in the middle Amazon. *B. Martiana* differs from *B. amazonica* in having larger leaves (10–25 cm. vs. 6–12 cm.) with more lateral nerves (8–12 pairs vs. 5–8 pairs) and much shorter pedicels (3–6 mm. vs. 13–20 mm.). It differs from *B. guianensis* in having larger (10–25 cm. vs. 6–15 cm.) oblong leaves with more lateral nerves (8–12 pairs vs. 4–5 pairs), a calyx which is usually narrow-tubular, not ovoid-campanulate, and a corolla tube which is rarely more than twice as long as the calyx. In *B. guianensis*, the tube is frequently $2\frac{1}{2}$ to 3 times as long as the calyx.

***Brunfelsia pilosa* Plowman sp. nov.**

Frutex. Ramuli graciles, pilosi vel villosi. Folia breve petiolata, anguste elliptica, oblongo-lanceolata vel obovata, apice acuminata, basi cuneata, utrinque ad costam pilosa, nervis lateralibus 6–9. Inflorescentia terminalis, sessilis. Flores 1–3, speciosi. Pedicellus brevissimus, apicem versus incrassatus, pilosus. Calyx tubulosoventricosus, in exsiccatione campanulatus, sparse vel dense pilosus, raro glaber, membranaceus, dentibus subaequalibus, lanceolatis, acuminatis; calyx in fructu persistens, quam capsula fere aequans. Corollae tubus quam calyx duplo longior, glaber, limbo patenti, lobis subaequalibus, rotundatis, lobo superiori posteriori parum majori. Stamina et stigma in tubi parte superiori in-

PLATE XIII



Photograph of holotype of *Brunfelsia pilosa* Plowman, L. B. Smith
& Pe. R. Reitz 12777.

clusa. Ovarium conico-ovoideum. Capsula ovoidea vel subglobosa, apice apiculata, laevis, atroviridis. Semina ellipsoides, reticulato-foveata.

A *Brunfelsia cuneifolia* calyce tereti pubescentia pilosa et corollae tubo longiori, a *B. uniflora* calycis dentibus longioribus, pubescentia pilosa et corollae tubo longiori, et a *B. australe* foliis apice acuminatis, pubescentibus angustioribus differt.

TYPE. BRAZIL: Santa Catarina: Municipio São Miguel d'Oeste, forest above Rio Reperi-guaçú, Peperi, ca. $26^{\circ}32'$ S., $53^{\circ}44'$ W., 300–400 m., 21 Oct. 1964, L.B. Smith & Pe. R. Reitz 12777 (holotype, GH; isotypes, MO, R, UC).

Shrub 0.5–2 m. tall, diffusely branched from near base. Branches spreading and arching, terete. Bark rough, longitudinally cracked, shedding in thin, chartaceous flakes, yellowish brown. Branchlets slender, pilose to villous, greyish green, dark purple when young. Leaves appearing two-ranked, scattered on branchlets, narrowly elliptic, oblong-lanceolate or obovate, acuminate at apex, cuneate at base, blade 3–7.5 cm. long, 1.3–3 cm. wide, pilose on both surfaces, primarily at midrib, firmly membranaceous, dull, dark green above, pale green beneath, the young leaves dark purple, lateral nerves 6–9 pairs, straight, often prominulous above; petiole short, 1–4 mm. long, pilose to villous. Inflorescence terminal, sessile, usually with one flower, rarely 2–3. Flowers showy, deep violet fading to pure white with age, odorless. Bracts 1–3, linear-lanceolate, 1–8 mm. long, pilose to villous, caducous. Pedicel short, stout, 1–3 mm. long, pilose; in fruit becoming corky, rugose-verrucose toward apex. Calyx tubular-ventricose, appearing campanulate in pressed specimens, terete in cross-section, 12–19 mm. long, sparsely to densely pilose with long weak hairs, rarely glabrous, membranaceous, purplish, drying reddish brown, teeth subequal, lanceo-

PLATE XIV

BRUNFELSIA pilosa *Plowman*



Brunfelsia pilosa Plowman. 1, flowering and fruiting branch, one-half natural size. 2, corolla limb from above, approximately natural size. Drawn from living plant in cultivation at Miami, Florida, Plowman 2963 (ECON).

late, 4–10 mm. long, acuminate; calyx in fruit persistent, partially enclosing capsule, becoming subcoriaceous, light green, the sinuses becoming more deeply cut. Corolla tube twice as long as calyx, 25–32 mm. long, 1.5–3 mm. in diameter, glabrous; limb spreading, 30–47 mm. in diameter, thickening at mouth prominent, round and white, lobes subequal, the uppermost posterior lobe slightly larger, broadly rounded, 10–15 mm. long. Stamens included in uppermost part of corolla tube; filaments slender, upper pair 3–4 mm. long, lower pair 3–5 mm. long, glabrous; anthers orbicular-reniform, 1–1.5 mm. in diameter. Ovary conical-ovoid, 2–2.5 mm. long, 1 mm. in diameter; style slender, 22–26 mm. long; stigma briefly bifid, in the form of a forceps, 1 mm. long. Capsule ovoid to subglobose, apiculate at apex, 12 mm. long, 10 mm. in diameter, smooth, dark green, shiny, pericarp thin-walled, dry at maturity, tardily dehiscent. Seeds ca. 10, ellipsoid, 5–6 mm. long, 2.5–4 mm. in diameter, reticulate-pitted.

DISTRIBUTION. BRAZIL: (São Paulo, Paraná, Santa Catarina, Rio Grande do Sul); Paraguay; Argentina (Misiones).

ADDITIONAL SPECIMENS. BRAZIL: São Paulo: Itapetininga, 17 Nov. 1887, Løfgren 389 (C, R, SP, US); Ypiranga, Nov. 1910, Lüderwaldt 2117 (RB, SP); Campinas, Jundiahy, Mar. 1900, Campos Novaes 216 (US); Villa de Serra Branca, 1 Nov. 1897, Puttemans 4328 (SP); Carandirú, Dec. 1912, Tamandaré 244 (RB); Mandaquil, 23 Nov. 1906, Usteri s.n. (G). Paraná: Curitibá, Bairro São Niolau, 18 Nov. 1966, Caprilioti 1659 (US); Itaperussú, 17 Nov. 1908, Dusén 7077 (GH, S); Jaguariahyva, 25 Oct. 1910, Dusén 10443 (GH, MICH, NY, S); Tamandaré, 4 Oct. 1914, Fönsen 1054a (F, GH, NY, S); São Matheus, 27 Feb. 1929, Gurgel s.n. (RB); Município Rio Branco do Sul, São Vicente, 27 Oct. 1967, Hatschbach 17610 (C, UC); Ponta Grossa, 2 Nov. 1928, Hoehne 23309 (SP, US); Foz do Iguaçú, Parque Nacional de Iguaçú, 8 Oct. 1946, J.G. Kuhlmann s.n. (RB); Ypiranga, 15 Sept. 1934, Reiss 99 (GH, NY). Santa Catarina: Município Caçador, Fazenda dos Carneiros, 1100 m., 7 Dec. 1962, Klein 3518 (US); Município Campos Novos, Palmares, 950 m., 28 Oct. 1963, Klein 4102 (US); Bituruna, Fazenda Etienne, 11 Feb. 1948, Mello Filho 793 (R); Nova Teutonia, 25 Oct. 1943, Plaumann 164 (RB);

Municipio Araraúja, Rodeio da Areia, 22 Nov. 1943, Reitz C-171 (RB); Santa Cecilia, 1100 m., Reitz & Klein 14136 (NY); Municipio São Miguel d'Oeste, Canela Gaucha, 8 km. northwest of São Miguel d'Oeste, ca. $26^{\circ}40'$ S., $53^{\circ}34'$ W., 700-750 m., Smith & Reitz 12757 (NY, R, US); Municipio Abelardo Luz, north bank of Rio Chapecó at Abelardo Luz, ca. $26^{\circ}35'$ S., $52^{\circ}20'$ W., 900-1000 m., 23 Oct. 1964, Smith & Reitz 12870 (C, F, LE, R); Tubarão, Nov. 1889, Ule 1521 (P). Rio Grande do Sul: São Leopoldo, 10 Sept. 1946, Henz 27246 (MO, NY), 20 m., 17 Sept. 1946, Henz 35305 (S); Municipio Rio Pardo, Fazenda Horticola, 70 m., Oct. 1923, Jürgens 19 (B); Colonia Santo Angelo, 4 Feb. 1893, Lindman A-597-b (S), Sept. 1900, Schwarzer 50 (L, S); Silveira Martins, 20 Mar. 1893, Lindmann A-597-c (S); Rio dos Sinos, 8 Nov. 1949, Rambo 44295 (BR, L); Bütterberg prope Montenegro, 13 Nov. 1950, Rambo 49144 (GH, P, W).

PARAGUAY: In regione fluminis Alto Paraná, Yaguarazapa, 1909-1910, Fiebrig 5460 (G, GH, US).

ARGENTINA: Misiones: Departamento de San Javier, Acaragua, 220 m., 30 Sept. 1947, Bertoni 2974 (B, W); Departamento de Candelaria; Bompland, 4 Oct. 1909, Jorgenson s.n. (BAB), Nov. 1910, Jorgenson s.n. (BAB); Santa Ana, Aug. 1901, Llamas 1530 (BAB, G). Departamento de Iguazú, Cataratas de Iguazu, 13 May 1969, Plowman 2735 (GH); Delicia, camino a El Dorado, 4 Nov. 1949, Schwindt 2270 (C, LD, NY); Puerto Aguirre, Río Iguazú, 19 Sept. 1922, I.N.T.A. 4435 (B).

Brunfelsia pilosa is a distinct species which has been consistently confused with several other plants of southern Brazil, especially *B. uniflora* (Pohl) Benth. and *B. australis* Benth. An early collection of *B. pilosa* (Sellow 1573) with atypically glabrous leaves and calyces was cited by Bentham as a syntype of his concept of *B. australis* (Bentham, 1846).

A small shrub with showy flowers, *Brunfelsia pilosa* occurs primarily in the understory of primary and secondary woods, as well as in thickets and along water courses. Flowering takes place from October to December with fruits appearing from February to May. It has a fairly wide altitudinal range, occurring from near sea level to 1100 m. The species ranges from the Brazilian State of São Paulo south to Rio Grande do Sul and extreme

northeastern Argentina (Misiones). In the central part of its range, where it occurs most commonly, this species seems to be associated with the formerly extensive *Araucaria* forests of the south Brazilian planalto.

Owing to its attractive flowers, this plant is cultivated in tropical gardens, although not so extensively as *Brunfelsia australis*. Recently, *B. pilosa* has appeared in the Florida nursery trade and is increasing in importance as an ornamental.

Brunfelsia pilosa may be distinguished from related species by its very short (1–3 mm. long), stout pedicels and an inflated tubular calyx with deeply cut teeth (4–10 mm. long). The twigs, leaves and calyx characteristically contain few to many long, weak trichomes. The flowers are large and showy with a corolla limb nearly 5 cm. in diameter.

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